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FRACTURE OF THE SKULL.

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THREE CASES OF FRACTURE OF THE SKULL.

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Herman G., aged 40, German farmer, while crossing a railroad in a two-horse wagon had the vehicle struck by a rapidly moving engine. Both horses were killed, as was his son, who was also in the wagon. About two hours after the accident the patient was admitted into the City Hospital, October 6, 1885. Besides a bad compound-comminuted fracture of the left leg, the following injuries to the head were found: a lacerated wound, 3½ inches in length, extending from right parietal eminence upwards and forwards. The larger part of this parietal bone was depressed and in many fragments (saucer-fracture). A piece of the skull, one and three-quarters by three-eighths of an inch in size, which was loose, was removed and the depressed bone elevated. There was also an extensive triangular lacerated wound of the scalp over the left parietal bone. Shock was very great; he was conscious but stupid, pupils were widely dilated, and his general sensibility obtunded. Respiration slow and shallow. He had bled considerably from both scalp and leg and was thirsty.* After the depressed bone had been raised drainage tubes were inserted under the scalp, the surfaces dusted with iodoform and the edges approximated by heavy silk thread. On the next day he had rallied somewhat, but was still thirsty and stupid. At the evening visit he was decidedly better in every way and had urinated naturally.

October 7 and 8.—Patient quiet and shows a constant tendency to sleep, but is easily aroused. On the latter day scalp wounds were dressed.

* I will dismiss the injury to the leg here by saying that an unsuccessful attempt was made to convert the fracture into a simple one; resection was performed, but the patient left the hospital with an ununited tibia.

October 9.—Brighter, but still sleepy. Complains of some pain in head, but no fever. He steadily improved and the drainage tubes were removed on the 14th. The discharge is very free.

On October 17, the pupils were found irregular but responsive to light; patient was apathetic and there was some intellectual disturbance, but no hallucinations. No note of anything of moment connected with the head symptoms was taken. The mind slowly became clear, the inequality of the pupils disappeared, and when he left the hospital on March 29, 1886, not a single sign, mental or physical, was present, to show what serious trouble had been done to the skull and its contents.

The temperature was 101½° on the fourth and fifth days, and 101° on the sixth and tenth, but never went beyond 100° afterward, and then only on one afternoon.

Emmanuel P., carpenter, aged 52, was thrown from his buggy while his horse was running away, and his vertex struck the curbstone. Was admitted into the City Hospital about two hours afterward—on November 24, 1885. There was found a lacerated wound in front of the left parietal boss, triangular in shape, and through which a depressed, comminuted fracture of the bone could be felt. There was great swelling of the left upper lid and subconjunctival ecchymosis; there was also a small lacerated wound over posterior portion of right parietal bone. The patient was comatose, snoring loudly. The wound was enlarged upon the left side and a pair of bone nippers used to remove a small triangular portion of the solid bone. Through the opening thus made the elevator was introduced and a piece of the lower portion of the parietal bone, in shape a parallelogram, one inch by three-quarters of an inch in dimensions, being found very loose, was removed. The balance of the depressed bones, which seemed to consist of the major part of the parietal and squamous portion of the temporal was then moulded into what seemed good shape, and very little effort made to approximate the edges of the wound. The hemorrhage, which was pretty profuse during the operation, was controlled by packing the wound and a bandage.

November 25.—No change in cerebral condition. Passes urine involuntarily; no albumen found in urine on introducing catheter. The bandage and packing were removed and the hemorrhage did not recur, but the wound gaped widely; the latter was dressed lightly.

November 26.—Much the same, but shows some irritability when interfered with, and the comatose condition is disappearing.

November 27.—Cerebral irritability increased; patient lying upon one or other side with limbs flexed, and he is constantly pulling at his penis; urine still flows into the bed, pupils normal and responsive, and swelling of eye-lid is decreasing. Since admission the pulse has averaged 60 beats to the minute, full; for first time opens eyes voluntarily; bed-sores have appeared over sacrum; seems to recognize friends; no stool since admission; a calomel purge acted freely.

December 3.—From day after admission the wound had been allowed to gape and had suppurated freely; at bottom of wound pulsation of *dura-mater* was plainly to be seen; patient, on this date, steadily improving, his appetite for food was good, the cerebral irritability had passed away, but he still passed water in bed; is conscious, but slow to answer when addressed, then answers rationally.

December 6.—Now asks regularly for urinal and is fully aware of his surroundings; wound over left parietal still gaping and suppurating freely; wound over right parietal has long since healed. Nothing to note of consequence until—

December 14.—On this day, at his request, he was discharged. His condition then was as follows: He still speaks slowly (this may be a peculiarity of the patient); his gait is somewhat tottering, but shows no tendency to ataxia or paralysis of either side; is perfectly sensible, and has lately gained in weight.

April 14, 1886.—Patient presented himself to-day; mental condition good. He still speaks slowly, but distinctly. There is no strabismus, vision and pupil contraction are good, and hand-grip is seemingly as strong upon one side as upon the other. There was a depression upon left side of skull, in parieto temporal region, of fully one-half inch in depth; at bottom of depression a granulating wound one-half by one-eighth of an inch in size. This wound did not pulsate. The patient has wonderfully increased in weight and strength.

April 30, 1886.—Wound has now entirely healed, no pulsation, and patient is going on a trip of pleasure to last some weeks.

Case III.—Henry L., German painter, aged 54, 5 feet 9 inches in height, weighs 160 pounds. At 3:30 P. M., April 16, 1886, fell 22 feet, striking fairly upon his head. Was admitted into

City Hospital half an hour afterward. Had been unconscious since fall.

Condition on admission, 4 P. M.: Greatly shocked, but could be aroused. In answer to questions, nothing but his name could be recognized; a very large hematoma under the scalp on both sides, rapidly increasing; a very small lacerated wound of scalp over left parietal bone, near *boss;* a considerable depression of the skull to be recognized in the neighborhood; pupils normal; no bleeding from the nose, ear or mouth; left arm motionless; left leg drawn up and extended constantly; apparently some voluntary movement of limbs of right side; two lower true ribs, left side, fractured near axillary line; pulse 84, weak; respirations stertorous and slow. 5 P. M., patient cannot be roused; right pupil dilated, left normal; movements of left leg continue; right arm is now in continuous motion; pulse 88; diagnosis was made of depressed fracture of left parietal bone, extending by a linear separation of bone into the base of the skull, with laceration of brain; too much shocked to admit of operation. At 6:20, pulse 120, slightly stronger. An incision, an inch and a half in length, was made through the scalp down to the bone, commencing at the small wound. Another of same length at an obtuse angle, to first enable me to raise a flap and get upon the bone, which I denuded of periosteum over a space one inch in every diameter. Skull was here smooth, and no fracture was anywhere discovered by the finger-nail or probe. Hemorrhage considerable, and pulse again became imperceptible. Whiskey, hypodermically, rallied pulse somewhat. At 11 P. M., pulse still stronger, the only sign of improvement.

April 17, 7 A. M.—Pulse stronger; breathing stertorous at intervals; right pupil still dilated, but left contracted. 3 P. M., temperature 99°; general condition otherwise the same; hematoma increased, though wound in scalp gaped widely; emphysema over fractured ribs; takes small quantities of milk. 6 P. M., temperature 100; priapism; tickling sole of foot produces strong contraction of lower extremity on either side; arms have been kept still all day, but any attempt to straighten them reveals presence of the state of "irritative paralysis."

April 18.—No change for better. Gradual rise of temperature to 102.5°, and death at 3.45 P. M. Patient never having regained consciousness.

**Post-mortem Appearances.*

Extensive bruise of right upper extremity; a large collection of blood over the skull, one-quarter of an inch in thickness; a depressed fracture of skull, saucer-shaped, three by four inches in diameter, involving parietal bone of left side and crushing bone into many pieces. From one part of this crush a linear fracture ran downward through external angle of frontal bone, lesser wing of sphenoid, greater wing of same bone, and ended at *foramen rotundum.*

On right side of skull the parietal was separated from the temporal, except at lower part, where a line of fracture ran downward through a small part of parietal, then temporal and towards median line to end at *foramen spinosum.* There was found an extra meningeal hemorrhage, to extent of about four ounces, covering an area two by three inches, and half an inch thick, and situated over fissure of Rolando on right side. Under this clot a rent in the *dura-mater* two inches in length and corresponding to the separation of the bones in coronal suture.

There was also an intra-meningeal clot to the extent of about three ounces, covering two-thirds of right hemisphere and directly connected with the extra-meningeal clot. The sources of hemorrhage were found to be the superior longitudinal sinus (which was torn up), as well as the brain substance itself at sight of laceration (in superior frontal convolutions of right side). The extent of the brain laceration was one inch in length by half an inch in depth.

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*Made by Dr. Friedenwald, Assistant House Surgeon.